IN THE CLAIMS:

A complete listing of the claims is set forth below. Please amend the claims as follows:

1. **(Previously Presented)** A computer-implemented method for generating a supply chain plan, comprising:

accessing, by a server, data in a database describing a supply chain network comprising a plurality of buffers, each buffer configured to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

generating, by the server, a linear programming problem for the supply chain network;

approximating, by the server, the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint;

calculating, by the server, an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers configured to supply the items to each buffer; and

adjusting, by the server, the optimized supply chain plan to satisfy the constraint, wherein adjusting the optimized supply chain plan comprises:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer, to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

generating, by the server, an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

2-3. **(Canceled)**

4. **(Previously Presented)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a lead time constraint.

5. **(Previously Presented)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a feasible time constraint.

6. **(Original)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting a quantity of items of at least one buffer to satisfy a lot constraint.

7. **(Original)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting a quantity of items of at least one buffer to satisfy a capacity constraint.

8. **(Previously Presented)** A system for generating a supply chain plan, comprising:

a database configured to store data describing a supply chain network comprising a plurality of buffers, each buffer configured to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

a linear programming optimizer coupled with the database and configured to:

generate a linear programming problem for the supply chain network;

approximate the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint; and

calculate an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers configured to supply the items to each buffer; and

a heuristic solver coupled with the database and configured to adjust the optimized supply chain plan to satisfy the constraint, wherein the heuristic solver is configured to adjust the optimized supply chain plan by:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

an order planner coupled with the database and configured to generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

9-10. **(Canceled)**

11. **(Previously Presented)** The system of Claim 8, wherein the heuristic solver is configured to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a lead time constraint.

12. **(Previously Presented)** The system of Claim 8, wherein the heuristic solver is configured to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a feasible time constraint.

13. **(Previously Presented)** The system of Claim 8, wherein the heuristic solver is configured to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a lot constraint.

14. **(Previously Presented)** The system of Claim 8, wherein the heuristic solver is configured to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a capacity constraint.

15. **(Currently Amended)** Logic for generating a supply chain plan, the logic encoded in a computer-readable medium and when executed by a computer configured ~~operable~~ to:

access data describing a supply chain network comprising a plurality of buffers, each buffer configured to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

generate a linear programming problem for the supply chain network;

approximate the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint;

calculate an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers configured to supply the items to each buffer; and

adjust the optimized supply chain plan to satisfy the constraint, the logic configured ~~operable~~ to adjust the optimized supply chain plan by:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer, to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

16-17. **(Canceled)**

18. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a lead time constraint.

19. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a feasible time constraint.

20. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a lot constraint.

21. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a capacity constraint.

22. **(Previously Presented)** A system for generating a supply chain plan, comprising:

means for accessing data describing a supply chain network comprising a plurality of buffers, each buffer configured to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

means for generating a linear programming problem for the supply chain network;

means for approximating the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint;

means for calculating an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers configured to supply the items to each buffer; and

means for adjusting the optimized supply chain plan to satisfy the constraint, wherein adjusting the optimized supply chain plan comprises:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer, to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

means for generating an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

23. **(Previously Presented)** A computer-implemented method for generating a supply chain plan, comprising:

accessing data describing a supply chain network comprising a plurality of buffers, each buffer configured to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a plurality of constraints;

generating a linear programming problem for the supply chain network;

approximating the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraints to yield a plurality of relaxed constraints;

calculating an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers configured to supply the items to each buffer;

generating an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer; and

adjusting the optimized supply chain plan to satisfy the constraints by repeating the following until a last upstream buffer is reached:

selecting a buffer, adjusting at least one time value of the corresponding time variable of the selected buffer to satisfy a lead time constraint, adjusting the quantity of items at the selected buffer to satisfy a lot constraint, and proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer, planning production to supply the adjusted quantity of items to the selected buffer at the adjusted time value, and proceeding to a next downstream buffer.

24. **(Canceled)**

25. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following until a last upstream buffer is reached:

selecting a buffer that requires a quantity of items;

planning production to supply the quantity of items to the selected buffer using at least some of the producers from the list of producers associated with the buffer; and

proceeding to a next upstream buffer.

26. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the items to the buffer using the producer;

determining a remaining quantity of items required by the buffer; and

proceeding to a next producer on the list.

27. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the quantity of items to the buffer using the producer;

proceeding to a next producer on the list if there is a next producer; and

planning production regardless of the list if there is no next producer.

28. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

selecting a producer from the list of producers associated with the buffer, the producers configured to supply the items to the buffer after the deadline;

planning production to supply at least some of the quantity of items to the buffer using the selected producer; and

proceeding to a next producer on the list.

29. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

selecting a supply time according to the list of producers associated with the buffer, the producers configured to supply the items to the buffer at one or more supply times after the deadline;

planning production to supply at least some of the quantity of items to the buffer using a producer configured to supply the items at the selected supply time; and

proceeding to a next supply time.

30. **(Canceled)**

31. **(Previously Presented)** The system of Claim 8, wherein the order planner is configured to repeat the following until a last upstream buffer is reached:

selecting a buffer that requires a quantity of items;

planning production to supply the quantity of items using at least some of the producers from the list of producers associated with the buffer; and

proceeding to a next upstream buffer.

32. **(Previously Presented)** The system of Claim 8, wherein the order planner is configured to repeat the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer; planning production to supply at least some of the items to the buffer using the producer;

determining a remaining quantity of items required by the buffer; and proceeding to a next producer on the list.

33. **(Previously Presented)** The system of Claim 8, wherein the order planner is configured to repeat the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the quantity of items to the buffer using the producer;

proceeding to a next producer on the list if there is a next producer; and

planning production regardless of the list if there is no next producer.

34. **(Previously Presented)** The system of Claim 8, wherein the order planner is configured generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

selecting a producer from the list of producers associated with the buffer, the producers configured to supply the items to the buffer after the deadline;

planning production to supply at least some of the quantity of items to the buffer using the selected producer; and

proceeding to a next producer on the list.

35. **(Previously Presented)** The system of Claim 8, wherein the order planner is configured to generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

selecting a supply time according to the list of producers associated with the buffer, the producers configured to supply the items to the buffer at one or more supply times after the deadline;

planning production to supply at least some of the quantity of items to the buffer using the producer configured to supply the items at the selected supply time; and

proceeding to a next supply time.

36. **(Canceled)**

37. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to generate the order plan by repeating the following until a last upstream buffer is reached:

selecting a buffer that requires a quantity of items;

planning production to supply the quantity of items to the selected buffer using at least some of the producers from the list of producers associated with the buffer; and

proceeding to a next upstream buffer.

38. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to generate the order plan by repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the items to the buffer using the producer;

determining a remaining quantity of items required by the buffer; and

proceeding to a next producer on the list.

39. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to generate the order plan by repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the quantity of items to the buffer using the producer;

proceeding to a next producer on the list if there is a next producer; and

planning production regardless of the list if there is no next producer.

40. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

selecting a producer from the list of producers associated with the buffer, the producers configured to supply the items to the buffer after the deadline;

planning production to supply at least some of the quantity of items to the buffer using the selected producer; and

proceeding to a next producer on the list.

41. **(Currently Amended)** The logic of Claim 15, the logic configured ~~operable~~ to generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

selecting a supply time according to the list of producers associated with the buffer, the producers configured to supply the items to the buffer at one or more supply times after the deadline;

planning production to supply at least some of the quantity of items to the buffer using a producer configured to supply the items at the selected supply time; and

proceeding to a next supply time.

42. **(Canceled)**

43. **(Previously Presented)** The method of claim 23, wherein generating the order plan comprises repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer, planning production to supply at least some of the items to the buffer using the producer, determining a remaining quantity of items required by the buffer, and proceeding to a next producer on the list.